

FGXM54

FIBERGLASS WALL FANS

Installation, Operation, and Maintenance Instructions

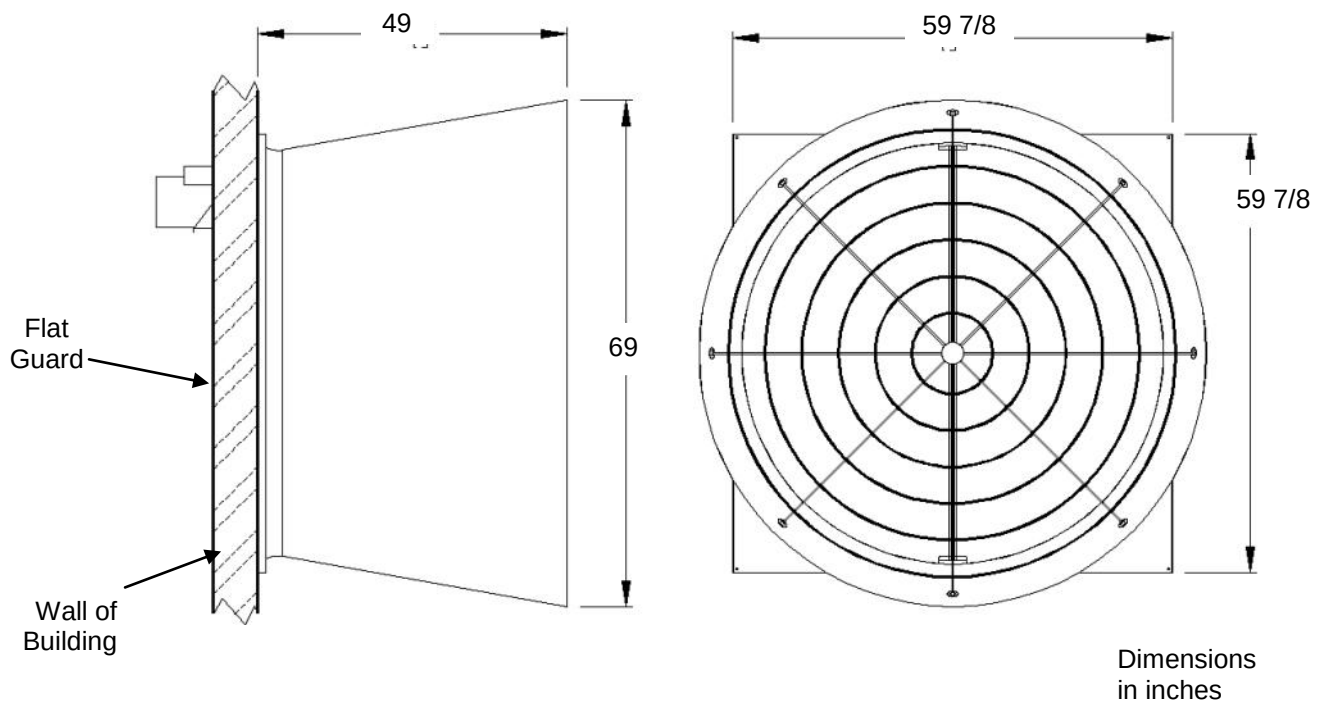


Figure 1

FGXM54L * FGXM54M * FGXM54N

UNPACKING

Inspect the fan for signs of shipping damage. It is the responsibility of the customer to report any shipping damage to the freight carrier.

WHAT SHOULD YOU FIND?

Fan, Damper Door Ring Assembly, Cone (4 cone panels), Rear Guard, Front Cone Guard, and Hardware Packages

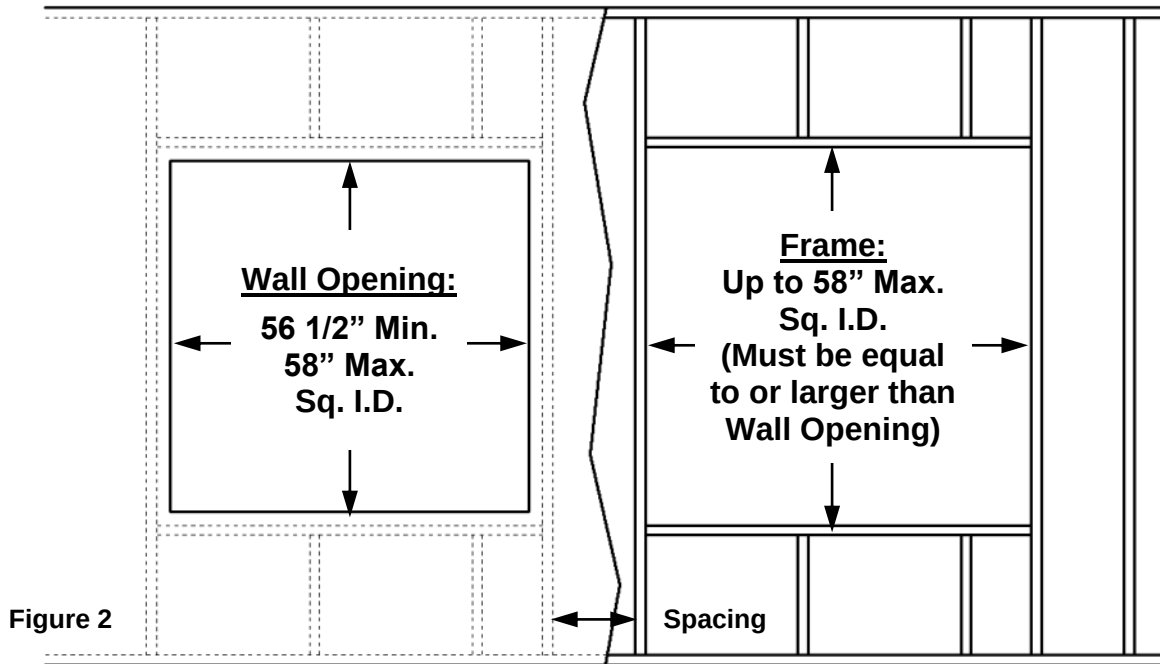
FRAMING

The Wall Opening ID may be between 56 1/2" and 58" square. The Frame ID may also be between 56 1/2" and 58" square, but must be equal to or larger than the wall opening. See **Figure 2** (for 2x4 frame construction) or **Figure 3** (for 4x4 post construction) below.

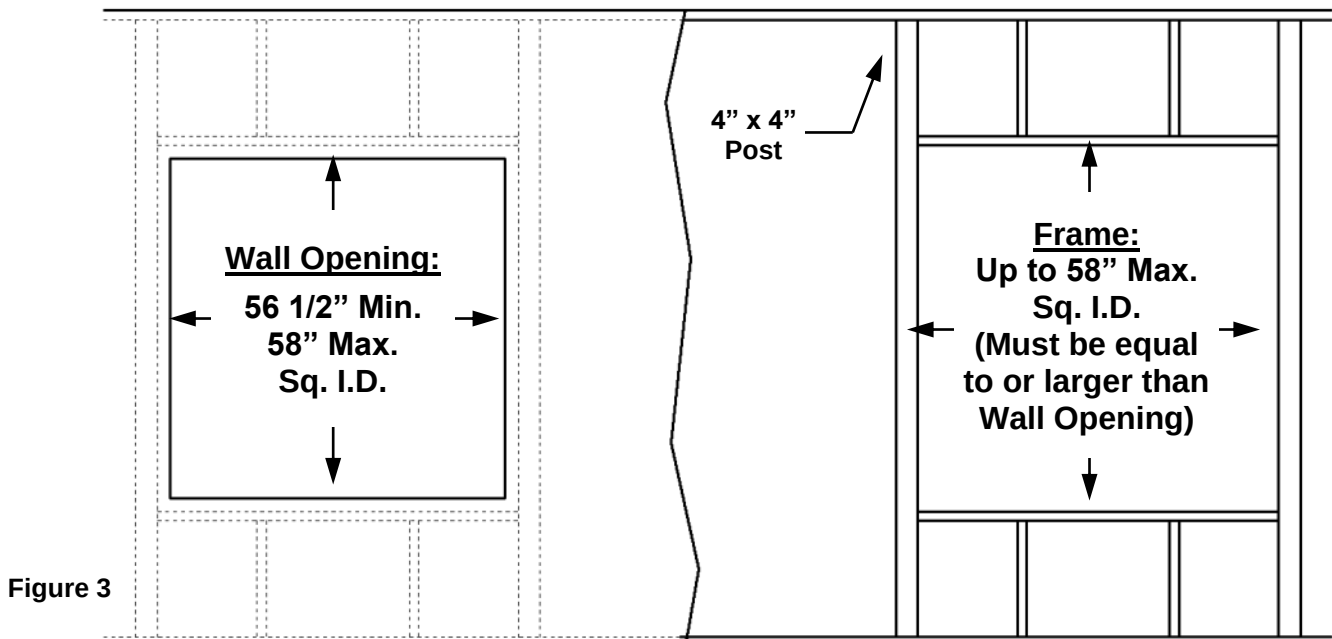
Note: For optimum performance, both the Wall Opening and the Frame square Inside Dimension (ID) should be 58".

FRAME CONSTRUCTION

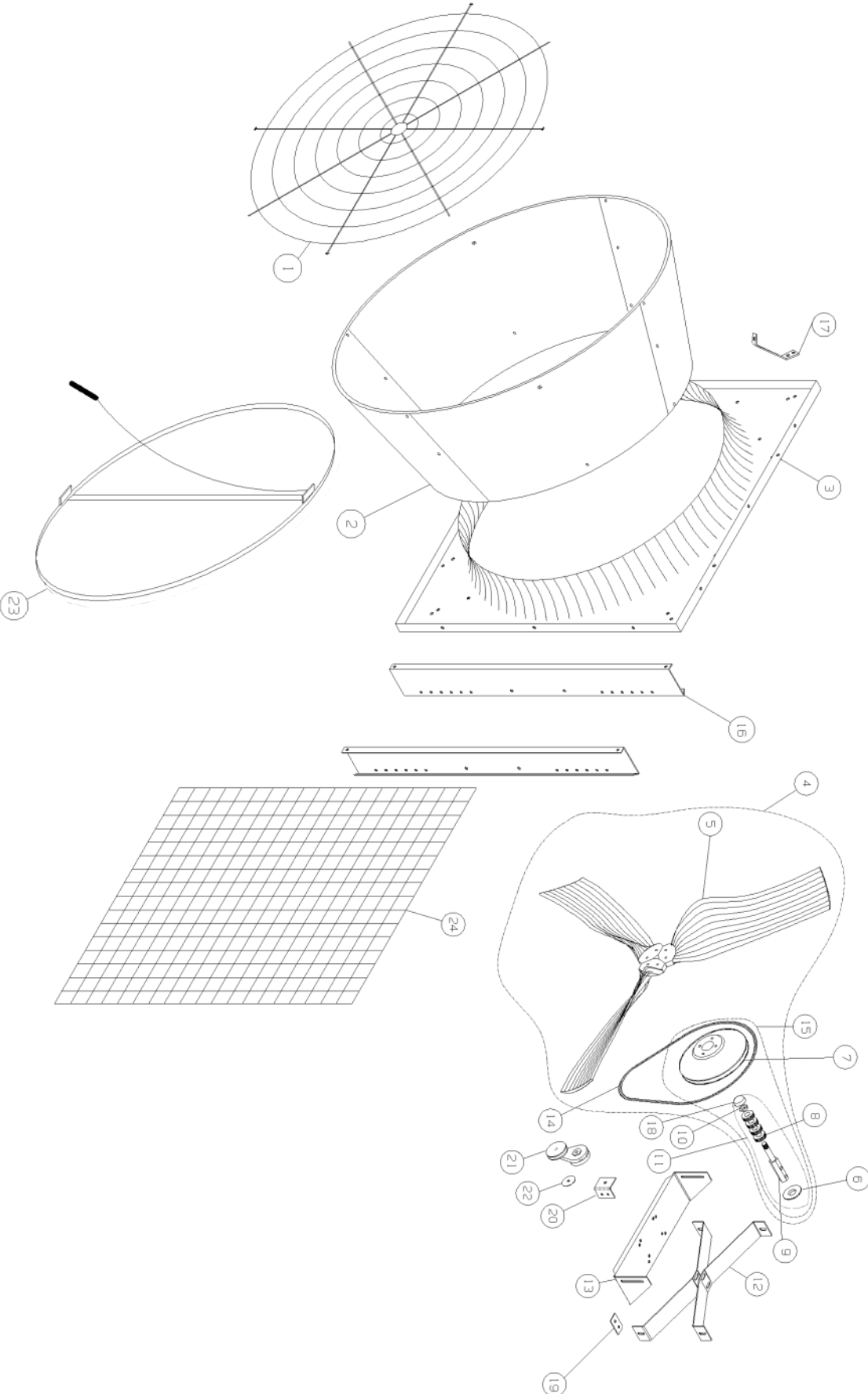
Recommended Spacing is at least 16"; Minimum Spacing is 12"



POST CONSTRUCTION



FGXM54 FAN EXPLODED VIEW / PARTS LIST



EXPLODED VIEW - PARTS LIST

CODE	DESCRIPTION	QTY	PART NUMBER
1	Cone Guard	1	14-143-168-3
2	Cone Panels Top	1	14-125-30-3
	Cone Panel Sides	2	14-125-30-1
	Cone Panels Bottom	1	14-125-30-4
3	Fan Panel	1	14-389-8-1
4	Blade Assembly	1	14-235-252-1
5	Blades	3	CALL
6	Bearing Protector	1	12-174-62-2
7	Disc	1	14-132-32-2
8	Bearings	4	12-31-3-2
9	Shaft	1	14-180-20-1
10	Locknut	1	1202.7-5/8E
11	Shaft Assembly	1	14-208-5-8
12	X-Braces	2	14-115-6-7
13	Motor Bracket	1	14-161-15-7
14	Belt	1	1247.3-75
15	Disc Assembly	1	14-229-11-13
16	Uprights	2	14-193-119-2
17	Cone Gussets	4	14-115-165-2
18	Vinyl Plug	1	1238.29
19	Shim	1	14-160-103-1
20	Tensioner Bracket	1	14-158-68-1
21	Rotary Tensioner	1	1258.12-6
22	RBT Protector	1	14-126-79-1
23	Damper Door Ring Assembly	1	14-376-6-1
24	Inlet Guard	1	1433.1-54DD

NECESSARY HARDWARE & TOOLS (NOT INCLUDED)

Some or all of the following tools and hardware will be used in the assembly & installation process.

- Wood Screws / Mounting Fasteners
- 7/16" Wrench (or Socket)
- 1/2" Wrench (or Socket)
- 9/16" Wrench (or Socket)
- Electric Drill
- Phillips-Head Screw Driver
- Level
- 2X4 Board or Angle Iron (mounting support)
- Caulk & Caulking Gun
- Dead Blow Hammer or Rubber Mallet
- Steel Wire Cutters



FAN ASSEMBLY

Before installation of fan, check carefully for shipping damage which may result in blade misalignment, deformed parts or other damage. After motor has been mounted, check pulley alignment and belt tension. For details on pulley alignment, refer to *Page 10* in this booklet. Before connecting the power source, check motor nameplate to be sure the correct phase and voltage will be applied. Single phase motors are shipped from the factory wired for 230 volt operation. For low voltage operation see motor manufacturer's instructions on nameplate. Make sure propeller turns freely without striking fan frame or any foreign object which may interfere with its operation. Note directional arrow on orifice to make sure propeller is rotating in the correct direction when power is applied.

As shown below, the fan may be assembled with the motor either below the fan shaft (Bottom Mount) or above the fan shaft (Top Mount). Before mounting the motor, determine whether a Top Mount configuration or Bottom Mount configuration best suits your needs.

Motor Mounting

Note: The motor bracket must first be rotated from its factory-mounted shipping position.

⇒ **Bottom Mount:** With the fan positioned such that the motor bracket is towards the lower left or lower right of the fan panel, remove the motor bracket from its shipping position and bolt it to the uprights as shown in **Figure 4**. **Table 1** shows the upright mounting holes (counting up from the lower end of the uprights) to use to mount the motor bracket.

⇒ **Top Mount:** With the fan positioned such that the motor bracket is towards the upper left or upper right of the fan panel, remove the motor bracket from its shipping position, and bolt it to the uprights as shown in **Figure 5**. **Table 1** shows the upright mounting holes (counting down from the top end of the uprights) to use to mount the motor bracket.

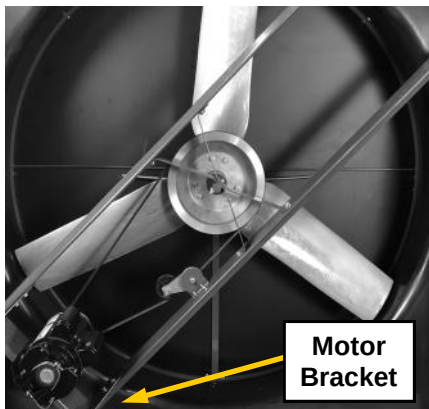


Figure 4 — Bottom Mount

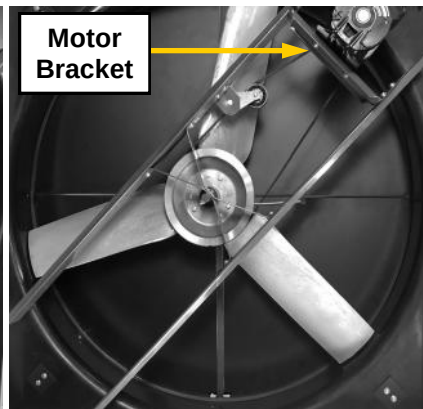


Figure 5 — Top Mount

MOTOR POWER / FREQUENCY		BOTTOM MOUNT	TOP MOUNT
1 HP	60 HZ	1 & 2	2 & 3
	50 HZ	1 & 2	2 & 3
1.5 HP	60 HZ	1 & 2	2 & 3
	50 HZ	1 & 3	2 & 4
2 HP	60 HZ	1 & 2	2 & 3
	50 HZ	2 & 3	3 & 4

Table 1 — Motor Bracket Mounting Upright Hole Locations

Note: It may be necessary to slightly adjust the motor bracket in its slots to achieve proper belt tension.

Place the motor on the motor bracket and bolt it down using (4) 5/16" X 1" bolts, flat washers and nuts provided. Make sure the motor base remains flat against the motor bracket.

The motor pulley should be placed on the motor shaft with the boss or "set screw" side of the pulley toward the motor. Using a long straight-bar, check the alignment of the motor pulley, the belt tensioner sheave, and the fan disc pulley. If necessary, loosen the motor pulley set-screw and/or the motor mounting bolts and adjust as necessary. To align the belt tensioner, loosen the two tensioner bracket bolts and adjust the position of the tensioner. Re-tighten pulley set screw, motor mounting bolts, and the tensioner bracket bolts as necessary.

IMPORTANT: Motor bracket bolts must be secured to maintain proper belt alignment and tension.

Once the motor has been properly mounted and the pulleys have been aligned, complete the assembly of the fan by threading the belt over the fan disc pulley groove, motor pulley, and belt tensioner. The factory mounted tensioner should come pre-set for proper belt tension. If a tension adjustment is necessary, refer to *Page 11* in this booklet. Again, check for belt alignment using a straight bar as described above. Next, turn the blade assembly by hand to insure free rotation. The fan is now ready to be mounted onto the wall.

FAN MOUNTING

Fan Support

To help hold the fan in place for mounting, a support such as a 2x4 or angle iron (not supplied) should be fastened to the wall below the Wall Opening. This Fan Support should be located a distance below the top of the lower frame board such that the fan is centered over the wall opening when placed on the Fan Support. Refer to **Figure 6** to determine the distance between the Frame and Fan Support based on the Frame Inside Dimension (*not* wall opening).

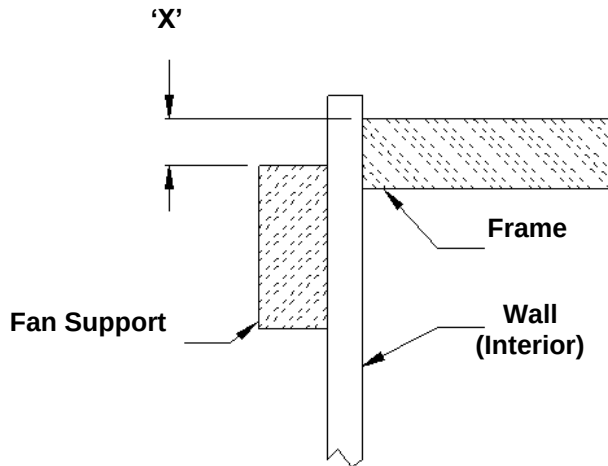


Figure 6 — Cross-section of mounting wall

Frame ID	'X'
58	7/8
57 3/4	1
57 1/2	1 1/8
57 1/4	1 1/4
57	1 3/8
56 3/4	1 1/2
56 1/2	1 5/8

(Dimensions in Inches)

Once the location of the Fan Support has been determined, place a level on the Fan Support to insure that it is perfectly horizontal, and fasten it to the wall (fasteners not supplied) as shown in **Figure 7**.

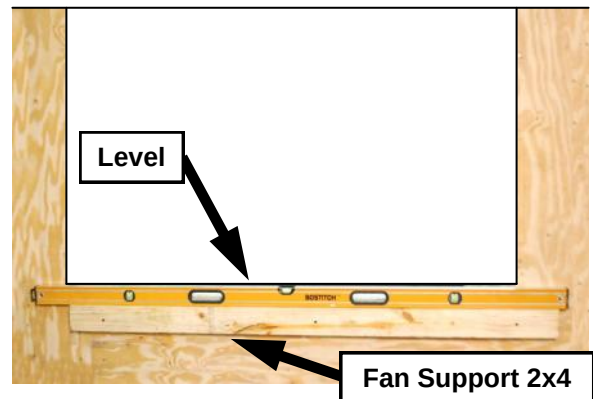
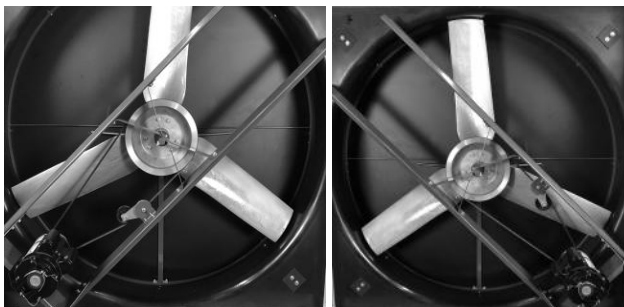


Figure 7

Fan Mounting

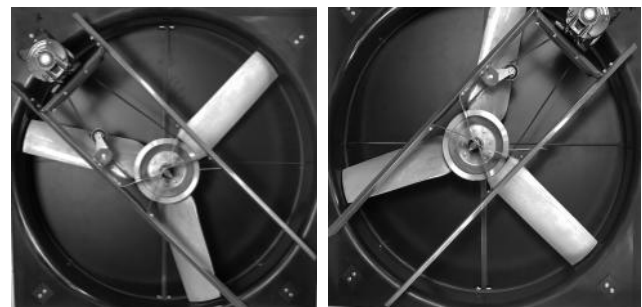
With the Fan Support securely in place, lift the fan and place it on the Fan Support against the wall opening. Note that the entire fan may be rotated to locate the motor to the left or to the right of center, as desired.

See **Figures 8 & 9** for possible configurations. Using the holes on the edge of the fan panel face, fasten the fan into wall (fasteners not supplied). Caulk the perimeter of the fan panel to seal it.



Bottom Mount

Figure 8 — Bottom Mount Configurations



Top Mount

Figure 9 — Top Mount Configurations

CONE ASSEMBLY

The discharge cone consists of four cone quarter panels that are joined by an interlocking tab-and-slot design. The two panels used for the sides of the cone are identical and have a set of slots on one side and a set of tabs on the other as shown in Figure 10. The panel used for the top has 2 sets of tabs. The cone panel used for the bottom has two sets of slots and a 3/4" drain hole located in the middle of the panel towards the small diameter end.

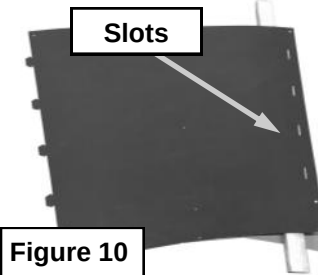


Figure 10

Begin by placing one of the Side Panels on the ground, with a 2x4 under the slotted edge of the panel as shown in Figure 10. Next, aligning the tabs in the Top Panel with the slots of the Side Panel, join the two panels by inserting the tabs into the slots — see Figure 11. Fasten the two panels together on the small diameter end using a 1/4" X 1" bolt up through the bottom of the panels with a 1/4" nylon nut and flat washer in the overlapping holes of

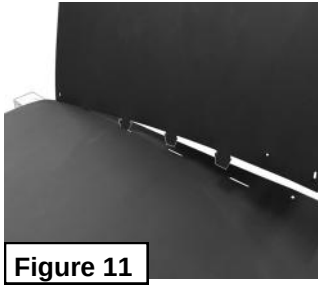


Figure 11

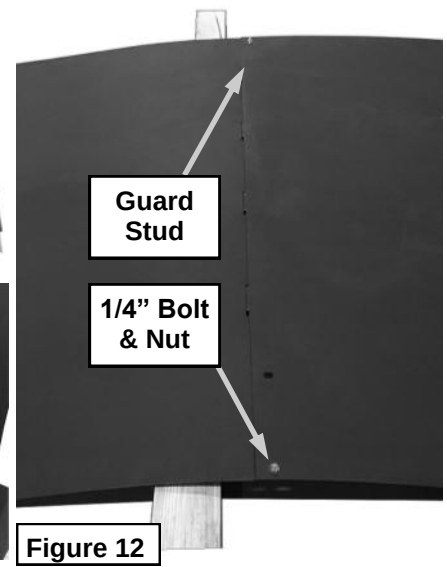


Figure 12

the two panels as shown in Figure 12. At the large diameter end, fasten the panels together with a 1/4" X 2" bolt, flat washer and flange nut. (Insert bolt down, through the top of the panel) This will later be used to form a guard stud as shown in Figure 18 on the next page. Repeat this process for the other Side Panel, and finally the Bottom Panel. Figure 13 shows all four fastened panels lying in the flat.

Now, the cone may be completed by fastening the Bottom Panel to the first Side Panel. To do this, bring the tabbed edge of the first Side Panel to the slotted edge of the Bottom Panel, and insert the tabs into the slots. Fasten these panels as described in the above paragraph.



Figure 13 — Cone Panels in the Flat

The cone should now be placed such that the larger diameter opening is on the ground as shown in Figure 14. A mounting-handle stud hole is located near the center of the Side Panels. (The Side Panels are the two panels adjacent to the Bottom Panel, which contains the drain hole, as shown in Figure 14.) Once all four panels are fastened together, attach a mounting-handle stud to the Side Panel using a 1/4" X 1" bolt, through the stud mounting hole of the side panel nearest to the large end of the cone. Fasten with a 1/4" nylon nut and washer. Repeat this process on both side panels.

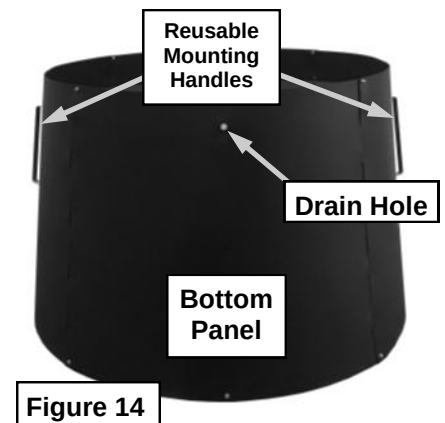


Figure 14

Next, the damper door ring assembly should be fastened to the cone. Note that the damper door ring assembly has a top — where the door-restraining cable is *permanently attached* — and a bottom — where the cable spring is held in place for shipment by a rubber band. Take the damper door ring assembly, *making sure the doors open downward*, and insert it at an angle into the cone as shown in Figure 15. The top end with the door-restraining cable permanently attached should be opposite the drain hole in the cone. Once the entire ring assembly has been placed inside the cone, level the ring and align the pre-drilled ring holes with the corresponding overlapping holes in the cone. From the inside of the assembly, place a 1/4" X 1-1/4" bolt with flat washer through the holes in the 3-o'clock and 9-o'clock positions of the ring (locating the drain hole at the 6-o'clock position) and fasten with two 1/4" nylon nuts and washers. This will hold the assembly in place while the rest of the bolts are inserted. This bolt will also serve as a mounting handle stud. Continue bolting the ring assembly to the cone with the remaining 1/4" X 1" bolts, flat washers and nylon nuts. See Figure 16 on the next page.

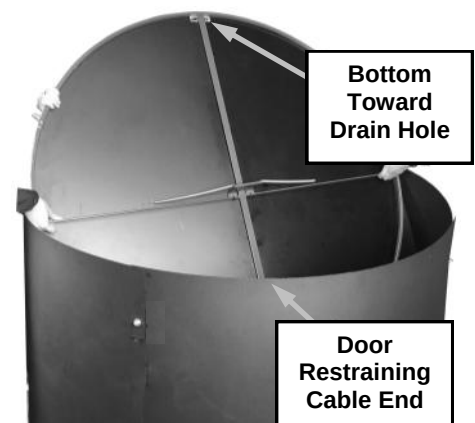


Figure 15 — Damper Ring Insertion

CONE MOUNTING

After the ring has been secured, caulk around the damper door ring to prevent light and water leakage. Next, secure the cone gussets to the small end of the cone. The gussets will be used to mount the cone assembly to the fan panel.

To attach a gusset, align the single hole in the gusset flange with the hole in the assembly ring and in the cone at the 45° angles. Push a 1/4" X 1-1/4" bolt with washer through the assembly ring, through the cone, and through the gusset. Fasten the bolt with a 1/4" washer and 1/4" whiz-lock nut. A washer is used here to prevent marring of the plastic cone. Repeat this process for the three other gussets.

To mount the cone assembly, install the reusable mounting handles onto the handle studs located on each side panel of the cone using 1/4" nuts. Pick the assembly up by the handles and place the top of the smaller end over the fan panel orifice. Make sure that the drain hole in the cone is at the bottom. Mounting handles will then be removed for use in additional cone mounting.

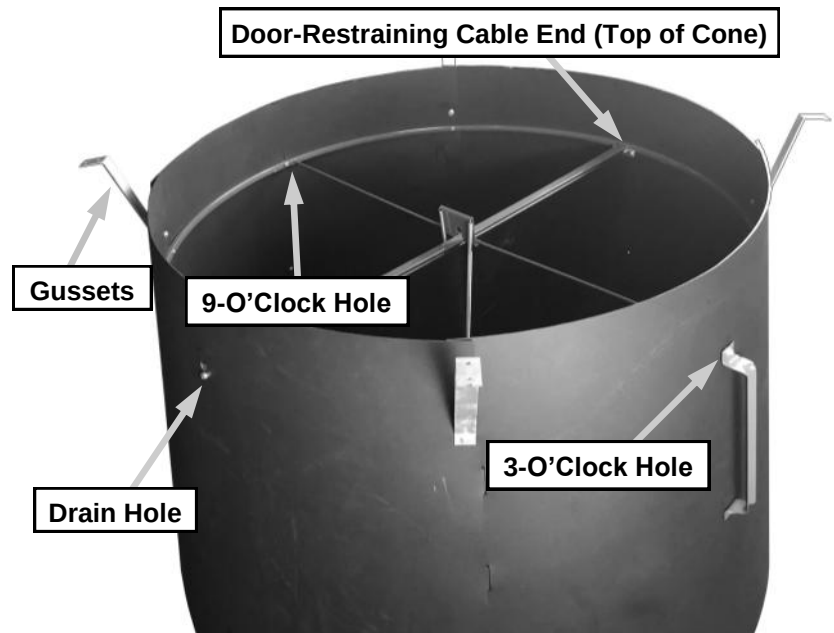


Figure 16 — Damper Door Cone Assembly

To mount the cone assembly, pick the assembly up by the handles and place the top of the smaller end over the fan panel orifice. Make sure that the drain hole in the cone is at the bottom. Fasten the top cone gussets to the fan panel using 1/4" X 1-1/4" bolts, 1/4" flat washers, and 1/4" whiz-lock nuts. A large plastic gusset washer is used on all four gussets on the inside of the fan panel to prevent marring of the fiberglass panel, as shown in **Figure 17**. Next, slide the rest of the cone over the orifice. This process may be aided by gently tapping the sides and bottom of the cone with a rubber mallet or dead-blow hammer from the inside of the building to allow it to slip over the orifice. Once the cone is in place, fasten the bottom cone gussets to the fan panel using 1/4" X 1-1/4" bolts, 1/4" flat washers, large plastic washers and 1/4" whiz-lock nuts.

To mount the cone guard, place 1/4" X 2" bolts & flat washers in the remaining holes in the large end of the cone **from the outside-in**. Place a Guard Spacer on all 8 bolts and fasten them with 1/4" whiz-lock nuts (remove nuts from initial assembly to install guard spacers). These will serve as the Guard Studs. See **Figures 18 & 19**. After the Guard Studs have been fastened, mount the Cone Guard by placing the Guard eyelets over the Guard Studs and fastening each with another 1/4" whiz-lock nut. While installing the Cone Guard, take the spring at the end of the door restraining cable and attach it to vertical guard rib as shown in **Figure 20**.

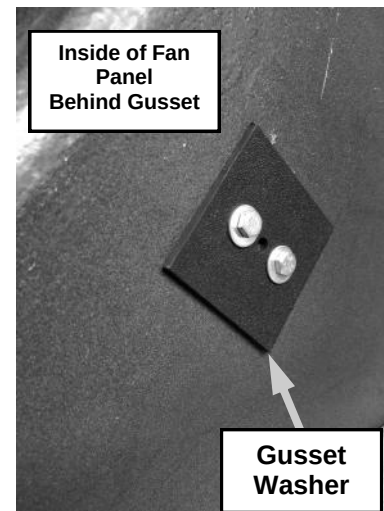


Figure 17

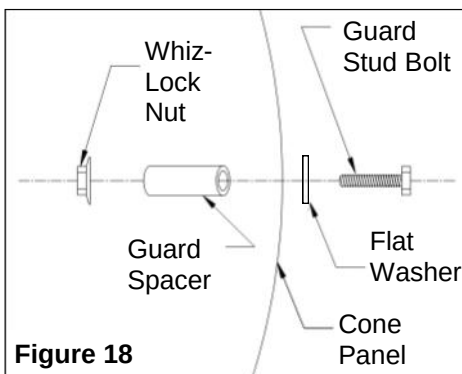


Figure 18

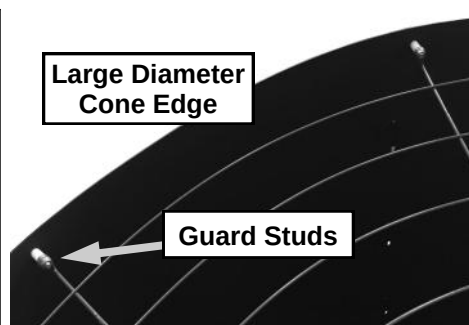


Figure 19 — Guard Stud Detail

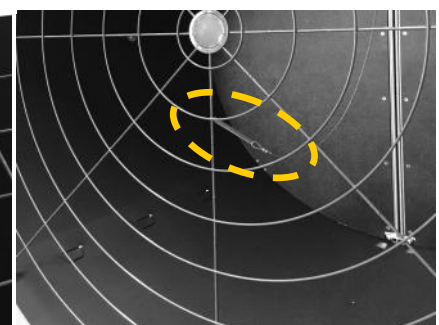


Figure 20 — Door Cable

DOOR & GUARD ASSEMBLY/GUARD MOUNTING

Next, mount the spring bracket at the center of the door ring assembly where the struts intersect. Use two cable ties to secure the spring bracket as shown in **Figure 21**. Attach one end of each spring to the spring bracket. The other end of each spring should be attached to the pre-punched hole in the damper door. To check for proper damper operation, open the doors fully, and allow them to close. If either door fails to close properly, rotate the cone assembly slightly on the fan orifice until both doors will close properly. Additionally, relocate the spring ends to the farthest hole in the doors from center.

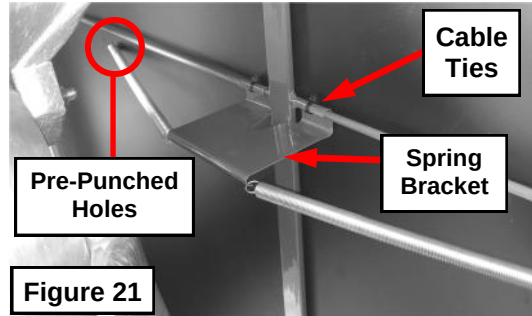
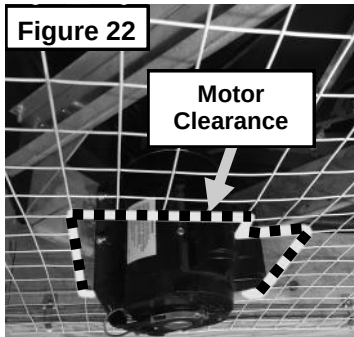


Figure 21



Be sure to install the inlet guard before operation. The inlet guard is cut to size at the factory. However, a clearance hole must be cut away for the motor to easily fit through, as shown in **Figure 22**.

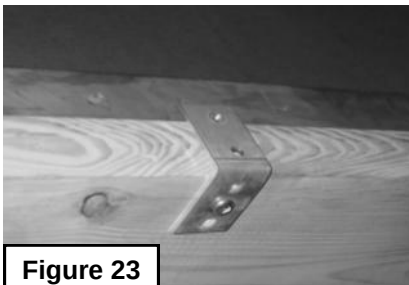


Figure 23

Prior to guard installation, the 3 guard clips and 6 guard hooks must be secured to the fan frame.

The guard clips consist of 'L' brackets

rail of the fan frame as shown in **Figure 23** (fasteners not included). The guard clips should be spaced such that the guard wire may slip between the guard clip and the frame. The guard hooks should be screwed into the sides and bottom of the fan frame. **Figure 24** shows the suggested locations of the guard clips and guard hooks.

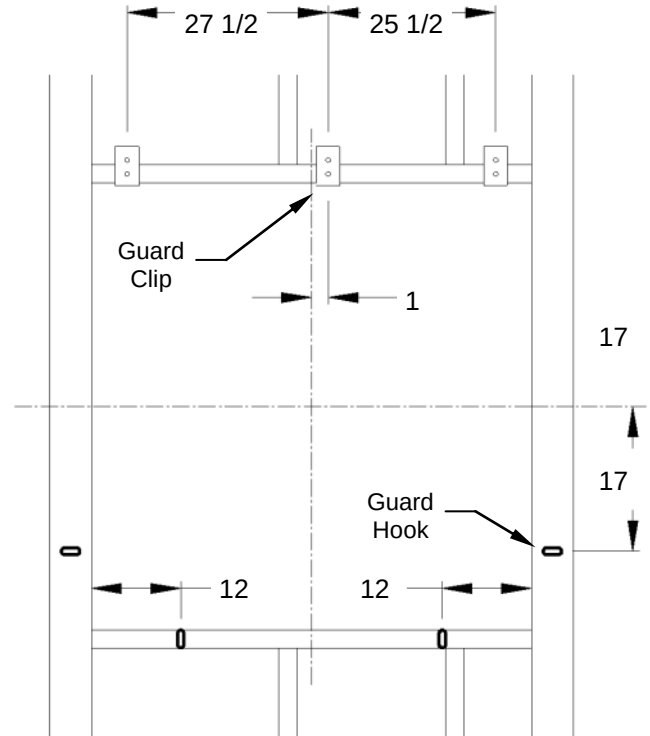


Figure 24 — Guard Clip & Guard Hook Locations

With the guard clips and hooks in place, complete final assembly of the fan by placing the inlet guard over the guard clips, and secure the guard with the guard hooks.

Figures 25 & 26 show the final assembled unit.



Figure 25

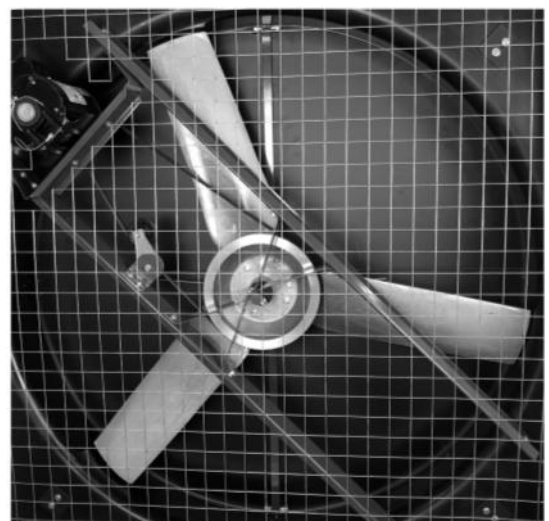
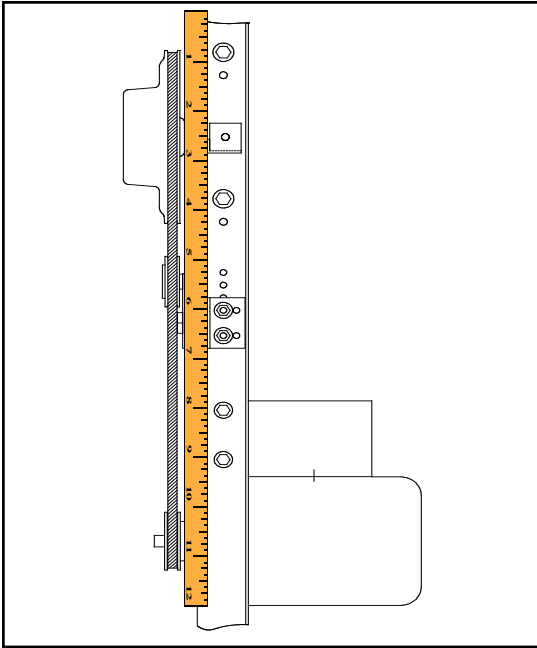


Figure 26

BLADE AND BELT ALIGNMENT INSTRUCTIONS



Spin the blade assembly by hand. Make sure that the blade assembly rotates freely and did not shift during shipment. If the blades rub in the fan orifice in the direction of the fan uprights, it will be necessary to loosen the four (4) 3/8" bolts that secure the fan x-braces to the fan uprights, center the blade assembly, and tighten the bolts to 25-30 ft-lbs torque. If the blades rub in the direction perpendicular to the fan uprights, it will be necessary to loosen the two (2) 3/8" bolts that secure the blade assembly's hexagonal shaft to the fan x-braces, center the blade assembly, and tighten the bolts to 25-30 ft-lbs torque.

Next, the fan drive assembly should be checked for alignment. The fan drive assembly must be aligned for proper fan performance and to minimize pulley and belt wear. Before wiring and operating the fan, check that the drive pulley, driven disc and auto belt tensioner are aligned by using a straight edge such as a scale or yard stick. If an adjustment is necessary, loosen the set screw on the motor pulley and adjust to proper alignment. Make sure to retighten the motor pulley set screw before the fan is operated. See **Figure 28**.

Figure 28 — Detailed View of Properly Aligned Fan Sheaves

ELECTRICAL WIRING

All wiring must comply with national, state, and local electrical codes. If fans are to be used for livestock ventilation to support life where failure could result in loss or injury, and continuous ventilation is essential, it is recommended that the fans be wired to individual electrical circuits, or at least two circuits per room. Any minimum ventilation fans should be on individual circuits.

WARNING

If the fans are going to be used for livestock building ventilation to support life where failure could result in loss or injury, the user must provide an adequate backup ventilation system and a failure alarm system.

The user must accept the risk of such loss or injury from failure of the ventilation system.

AUTO BELT TENSIONER

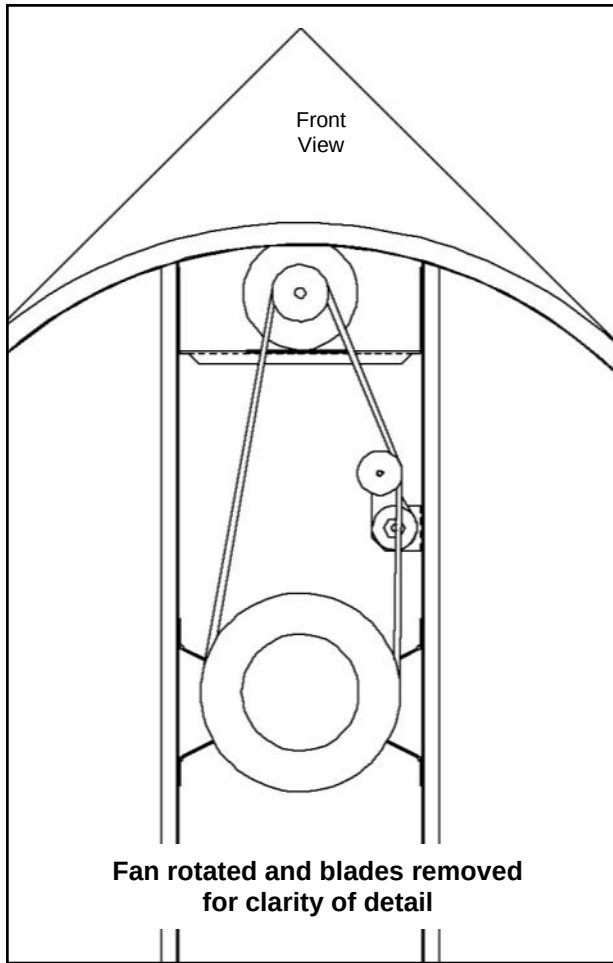


Figure 29 — Motor/Pulley, Tensioner, Disc and Belt

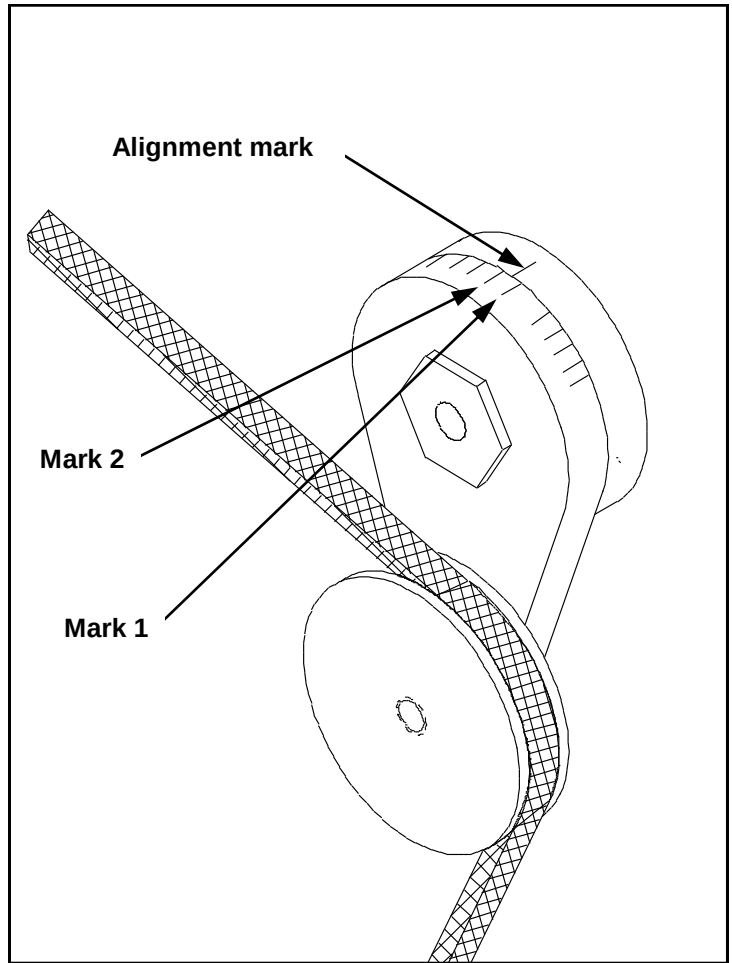
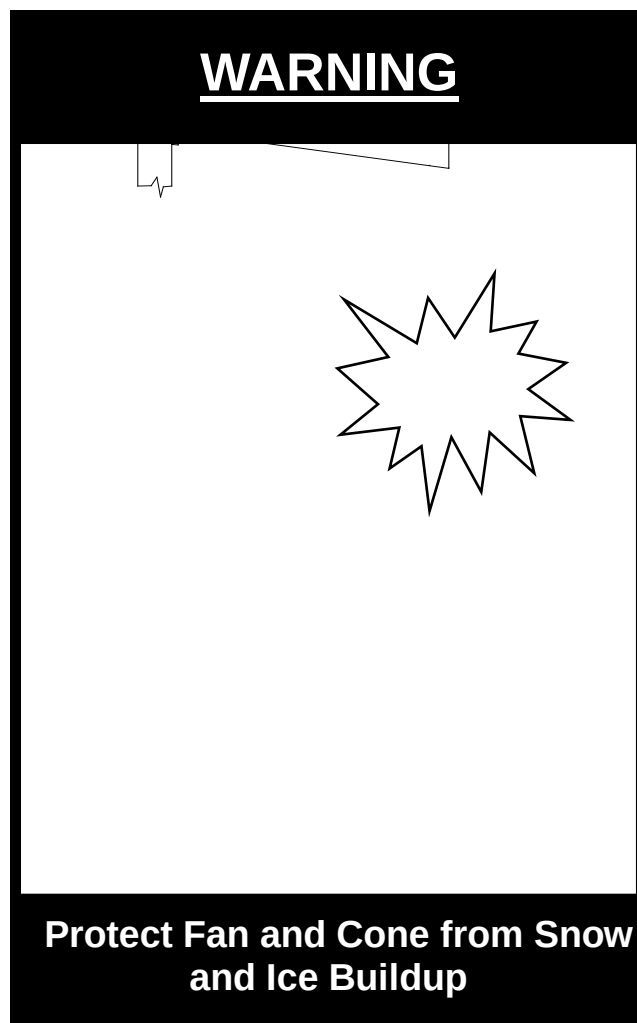
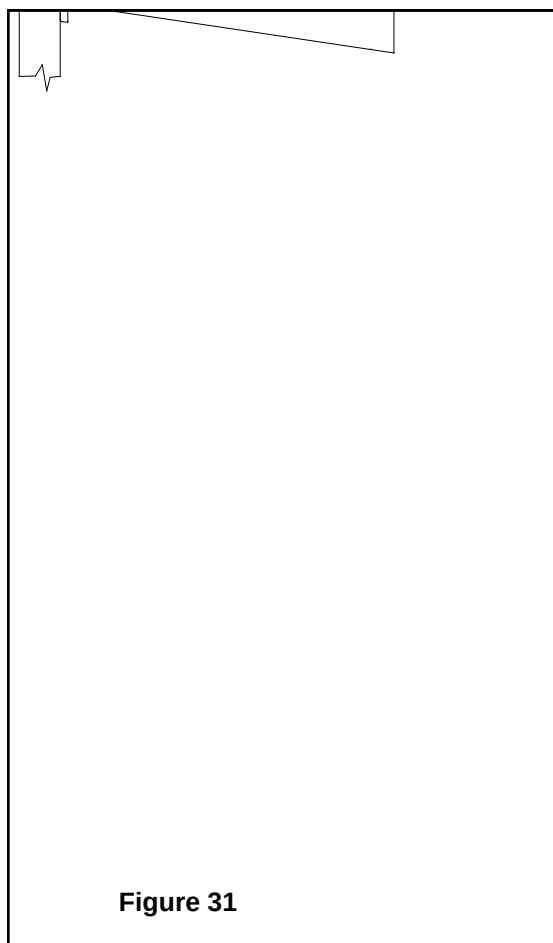


Figure 30 — Tensioner and Belt Showing Tension Alignment Marks

The Automatic Belt Tensioner comes from the factory mounted and preset for adequate belt tension. If further tensioning is required, loosen the 3/8" bolt holding the tensioner to the tensioner bracket. Then, using a 15/16" wrench, rotate the tensioner assembly such that the alignment mark is between mark 1 and 2 on the idler arm (see Figure 30). Re-tighten the 3/8" bolt. Turn the blade assembly by hand to insure free rotation. **Do Not Over Tension The Belt.** This will cause premature belt and bearing failure. To check that the belt tension is not too high, place a finger midway between the fan pulley and motor pulley and push inward about 1/2". The force required to do this **IS NOT TO EXCEED** 5 pounds.

CONSTRUCTION FOR WINTER WEATHER PROTECTION



If your area is subject to snow, consideration must be taken to protect from the possibility of snow and ice building up on the roof and sliding down onto the fan and cone. One option is to build a small section of roof over the fan and cone. See Figure 31.

WARNING

Fan and/or cone damage caused by this type of external source WILL NOT be covered by AMERICAN COOLAIR warranties.

Note:

During winter months, you may not need to operate all of your fans. It is advisable to seal up those fans which will not be used during the colder months to minimize heat loss as well as condensation. To do this, turn the fan control off, and insulate the fan intake.

INITIAL STARTUP

1. Before installing the inlet guard, spin the blade assembly by hand and make sure that the blade assembly rotates freely and did not shift during shipment. If the blades rub in the fan housing, refer to *Page 10* for instructions on centering the blade assembly.
2. Check belt for proper tension.
3. Check motor pulley, driven disc and idler pulley for proper alignment.
4. Check to make sure all fasteners are properly tightened.
5. Check circuit phase, voltage and wiring connection against that shown on motor nameplate.
6. Check for correct fan rotation.
7. Replace the inlet guard. The fan is now ready for proper operation.

MAINTENANCE

CLEANING

- The fan should be cleaned regularly. Always turn the fan off and disconnect the power connection before cleaning.
- The motor should be wiped clean with a dry cloth or a brush. This will keep the motor running cool. **DO NOT** pressure wash the motor.
- The blades should be wiped clean to maintain maximum air performance and minimize fan imbalance. **DO NOT** pressure wash the center of the disc assembly, or premature bearing failure may be induced.
- The damper door assembly should be wiped clean so that the doors will pivot freely, open completely, and close securely.
- The interior sides of the fan, wall housing & doors, should be washed properly after disinfecting the house to prevent rusting. We recommend using Simple Green detergent or a similar product.

CHECK FASTENERS

Inspect all fasteners on the fan. This is a very important safety issue. If any loose hardware is found, tighten it immediately.

CHECK BELT TENSION

The belt must have proper tension to insure proper fan speed and maximum air performance. Refer to *Page 11* if re-tensioning is necessary.

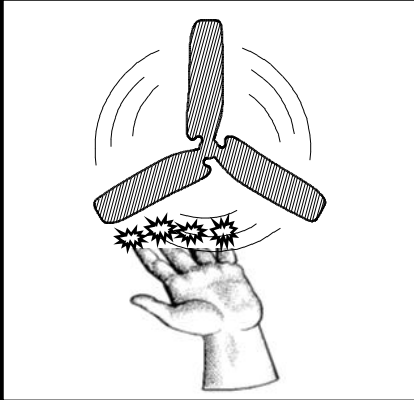
CHECK DRIVE ALIGNMENT

The belt must be properly aligned in the pulleys to minimize pulley and belt wear. Refer to *Page 10* for instructions.

CHECK DOOR-RING GASKET

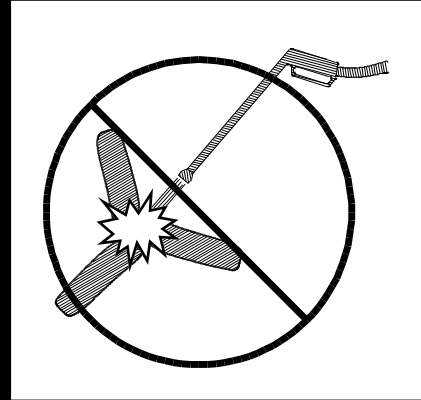
The door-ring is lined with a foam rubber gasket material. This gasket provides a seal between the door-ring and the doors, insuring proper door function and minimizing air leakage. This gasket should be checked periodically to make sure it is intact and properly sealed to the door-ring. If the material should come loose from the door-ring, it must be re-sealed to the door-ring with an appropriate interior/exterior adhesive.

WARNING



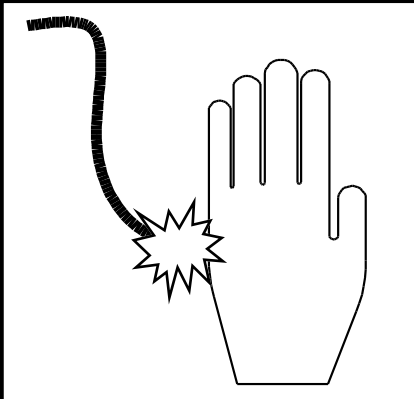
— Moving Parts —
Disconnect power
before servicing the
fan

WARNING



Precision Bearings
Do Not
Pressure Wash at
blade assembly center

WARNING



— High Voltage —
Disconnect power
before servicing the
fan

WARNING

CAUTION



DO NOT INSTALL FAN WITH MOVING PARTS WITHIN 8 FEET OF FLOOR OR GRADE LEVEL WITHOUT A GUARD THAT COMPLIES WITH OSHA REGULATIONS. **DO NOT** USE UNLESS ELECTRICAL WIRING COMPLIES WITH ALL APPLICABLE CODES. **DO NOT** WIRE WITHOUT PROVIDING FOR A POWER SOURCE DISCONNECT AT THE FAN ITSELF. **DO NOT** SERVICE EXCEPT BY A QUALIFIED MAINTENANCE TECHNICIAN AND ONLY AFTER DISCONNECTING THE POWER SOURCE. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.



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